

*The*

# *Young Naturalist*

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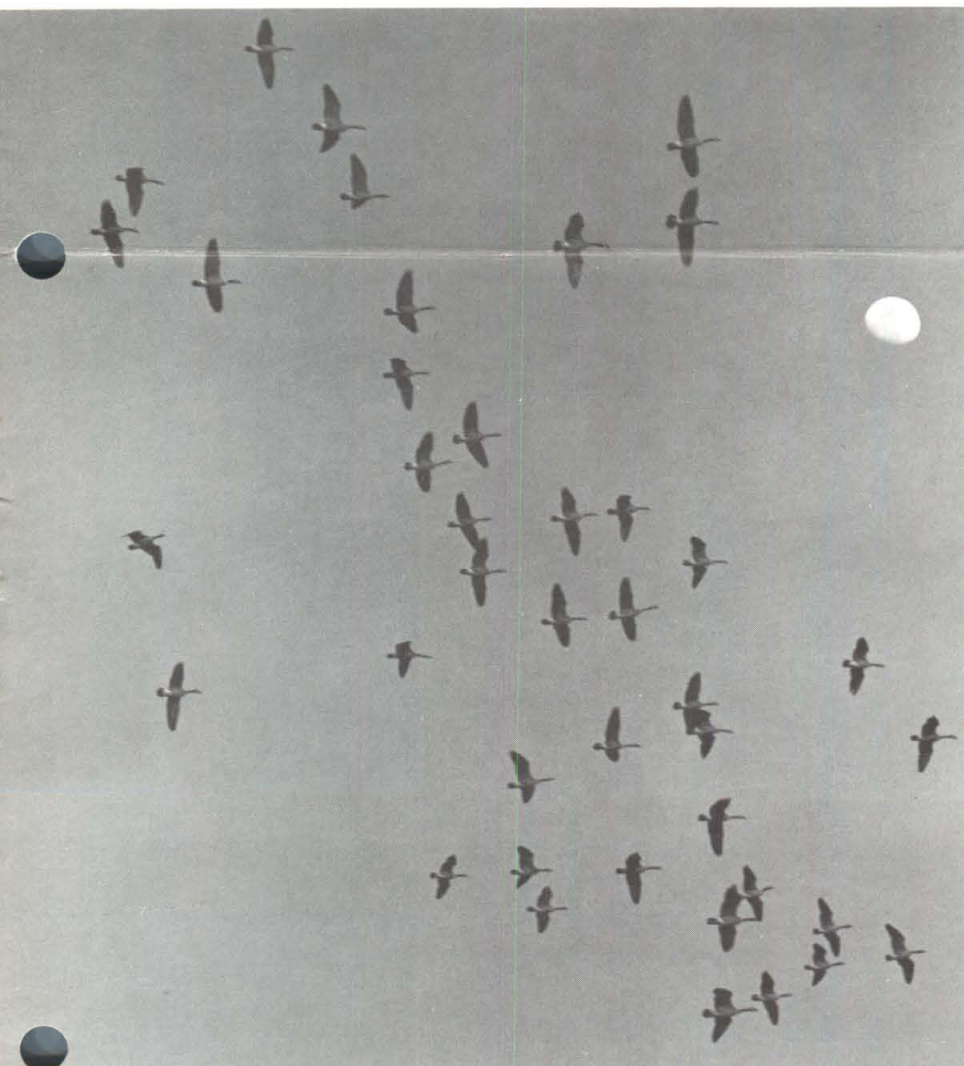
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## *Dangerous Journey*

*by Barry Griffiths*



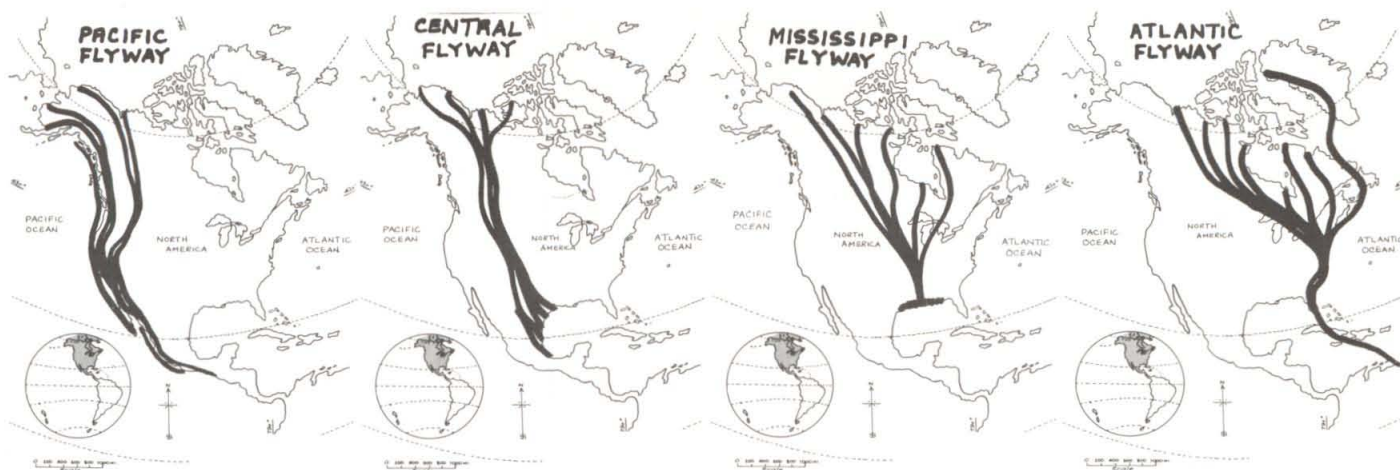
If you have been keeping your eyes open when travelling around the countryside lately, you must have noticed the huge flocks of birds that have been gathering and flying excitedly around. As you have probably guessed they are preparing for that age-old spectacle called migration.

No-one really knows why birds migrate. However, many people think they know, but because they cannot prove it, their ideas are called theories. One theory is that since there is not as much food left for the birds, they must move southwards in order to obtain enough food to stay alive. Another theory holds that as the length of the days in the fall becomes shorter, the lack of daylight triggers a reaction in the bird's body and forces it to start on its dangerous journey southwards.

Whatever the reason, and we hope that scientists in the future will be able to discover the true reason for migration, by the end of September a great many of the birds have left and many others are preparing to leave. It will take some of the birds over three months to reach their winter home.

*Continued next page*





## THE FOUR MAJOR NORTH AMERICAN BIRD MIGRATION ROUTES

It is easy to follow the paths of the birds as they leave Canada because they travel along four major routes on the North American continent. These routes are called flyways. Which flyway is nearest your home?

As the birds travel down their flyway, they are faced with a tremendously difficult and dangerous journey.

All it takes is a strong wind to cut across their path during the night and carry the exhausted birds far out to sea. By daylight they are sometimes unable to find and reach the safety of land.

Fog seems to confuse migrating birds as they try to fly in the right direction. This is when brightly lit buildings produce a great attraction for them. Unfortunately, many birds die when they bump into these man-made structures.

And then, of course, the eager hunters waiting along the length of the flyways, take a tremendous toll of ducks and geese as they attempt to reach their winter home. It is interesting to note that young birds raised during the summer fall most often to the hidden gunners. It seems that if the older birds have been able to survive their first trip South, then they have learned a great many tricks that help them avoid certain death in their future journeys South.

The birds that you see migrating during the day are usually the strongest fliers. Birds such as swifts, swallows, herons, geese, ducks and hawks

are used to flying a great deal of the time in search of food.

The birds that we don't see migrating, the birds that seem to vanish overnight, tend to be the weaker flying birds, the birds that are shy and secretive in their normal behaviour. Birds such as rails, sparrows, thrushes, warblers, and wrens usually migrate by feeding and resting during the day, and travelling by night. If you listen closely at night, you may be able to hear their calls as they fly overhead.

The fleet, streamlined shorebirds migrate at an average speed of 40-50 miles per hour, whereas the slow,

heavy herons only manage 18-19 miles per hour on the average. Remember, it is not usual for migrating birds to keep on flying until they reach their winter homes. They take their time, travelling a few miles a day, or many miles, and then resting and feeding and building up their strength for the next step of their southward flight.

The Canadian countryside loses a great deal of its charm when our summer visitors leave, and we have to wait until the following spring when the next scene in the story is played, the gaudy spectacle of the northward-bound birds.



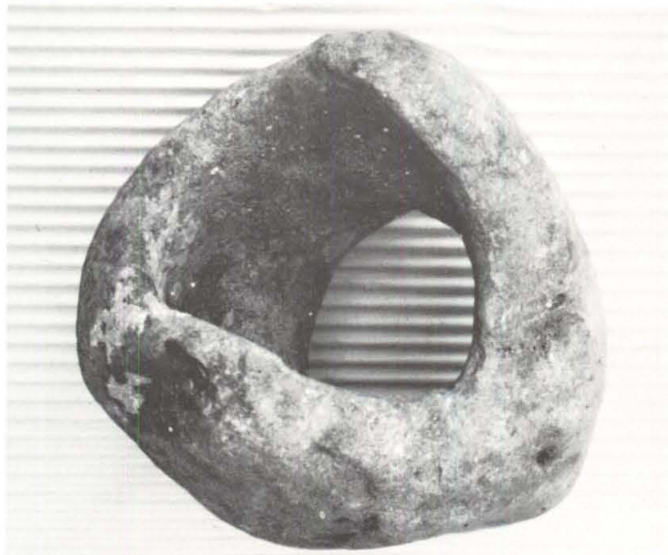
Rough-legged Hawk

Donald Gunn



# STRANGE CATCHES—"STONES WITH HOLES IN"

By R. A. Chandler & J. C. Medcof  
Fisheries Research Board of Canada  
St. Andrews, New Brunswick



Photograph 1

*Fisheries Research Board of Canada*

Our east-coast fishermen find strange things in their catches. Strange animals, strange plants and strange objects of many kinds come up in their scallop drags and otter trawls. Good fishermen are usually inquisitive and when something unfamiliar comes aboard they are not content until they know what it is. So they sometimes pass their questions on to us in the form of objects to be identified. When we don't know the answers, we can usually find someone who does.

The crews of scallop draggers from Pubnico, N.S., have sent us "stones

with holes in" that they found in their catches while fishing on Georges Bank, a rich fishing ground approximately 200 miles southwest of Yarmouth, N.S. The stones were almost round and 6 to 8 inches in diameter. Some had blind pockets, while others, like the one shown in Photograph 1, had holes that went right through them.

These stones are "concretions" that were once part of the Miocene bedrock (20 million years old) that underlies Georges Bank.

A concretion is formed through a very slow and complex exchange of

chemicals between a core (which very often is a clam shell) and the surrounding bedrock. This exchange results in a hardening of the bedrock immediately surrounding the core. The core and the hardened layer of rock is the concretion.

Constant motion of waves and tidal currents wears away soft surface parts of the bedrock leaving the hard concretion exposed as a raised lump. Eventually the lump breaks away from the bedrock to become a separate stone. Thereafter, the surface of the hard concretion erodes slowly until the fossil core is partly exposed and, in time, the whole core may drop out. Photograph 2 shows a small concretion found in 1966 on Georges Bank by Dr. Caddy of this station during a research cruise on the M.V. *Harengus*. The core of this specimen was a fossilized clam that dropped out when the catch of a scallop drag was dumped on deck. This left a blind pit (the beginning of a hole) in the middle of the concretion. The fossil clam fits the pit exactly. With further wear, the pit would have deepened until a hole went right through it and it would look like the one in Photograph 1.

That is how we get "stones with holes in". You must not be in a rush to get one because it takes thousands of years to make a concretion.



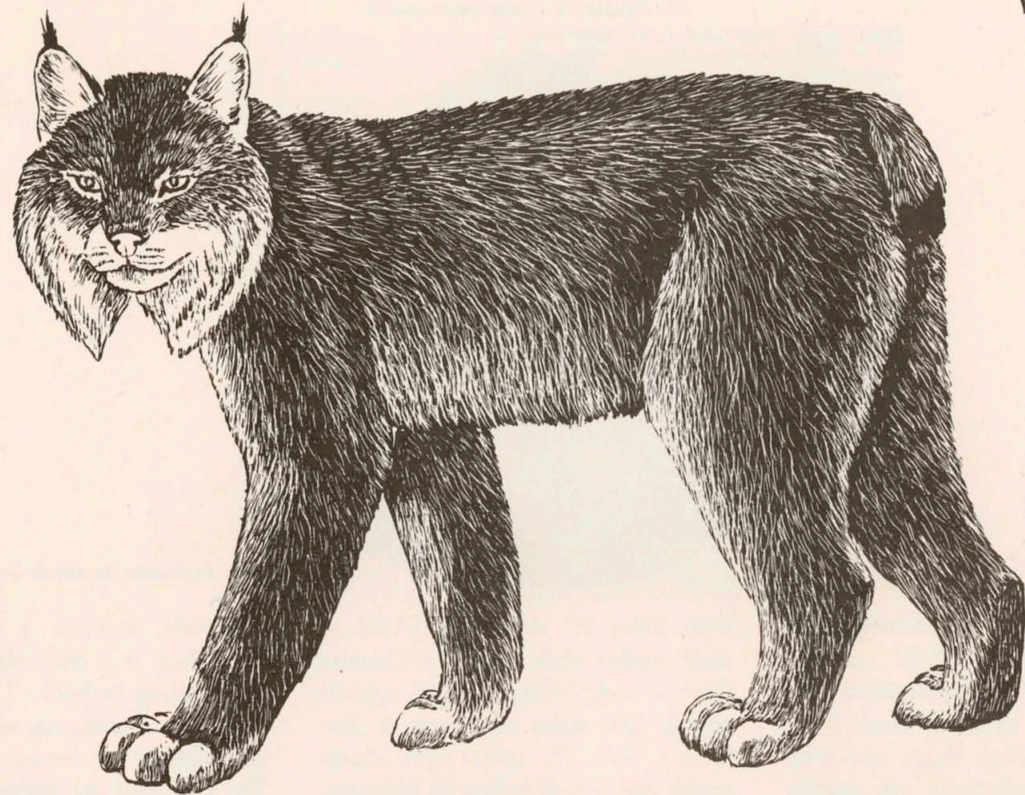
Photograph 2

*Fisheries Research Board of Canada*



# Predators of Canada — Native Cats

Written and illustrated by Don Foxall



The long, thick fur of the lynx provides warmth during winter.

## THE LYNX

Canada lynx are truly a northern animal suited for life in the thick coniferous forest and swampy areas of northern Canada. They are well equipped to cope with their often harsh environment. The long, thick fur of the lynx provides warmth during the winter. Its long legs and large, heavily furred feet act like snowshoes and enable the lynx to hunt in deep snow that would seriously hinder an animal not as well adapted to this environment. The lynx has the extremely good eyesight that is essential for an animal that hunts mostly at night, and lives in the thick, dimly-lit forest. In fact, the name "lynx" comes from a Greek term that refers to the ability to see well in dim light. Although they prefer the dense forests, their search for food occasionally takes them beyond the northern fringe of trees to the tundra.

The lynx is adept at climbing and will sometimes lie in wait above a rabbit runway and pounce on its unsuspecting victim as it passes below it. More often though, it prowls silently through the forest until it locates a potential meal and then relies on stealth and a short rush to capture its prey.

Lynx are dependent on the varying hare or snowshoe rabbit, as it is commonly called, for the bulk of their food. Populations of snowshoe rabbits run in cycles, reaching their greatest numbers about every ten years, and then dying off drastically. When this occurs, the lynx face starvation and their numbers are greatly reduced. The fluctuations in the lynx populations are about one year behind the rabbits.

Lynx also prey on spruce grouse, ruffed grouse, lemmings, and occasionally beaver, but they cannot obtain enough of these species to carry them through the times when the snowshoe rabbits are scarce.

The lynx is a rangy, very short-tailed cat with long legs and large furry feet. It has long tufts on the tips of its ears, a large face ruff and completely black-tipped tail. The average weight of a fully grown lynx is about 17 pounds, but may vary from 11 to 35 pounds. The long fur is buffy grey or silvery grey with indistinct spottings.

The long, delicately shaded fur of the lynx is quite valuable to the trapper. Too much trapping, and the destruction of its natural habitat by logging and fire has greatly reduced the lynx population. They will not live close to man and are disappearing in the southern portions of their range where the bobcat is becoming established. The alarming decline in their numbers seems to indicate that the lynx is in danger of becoming a vanishing species.

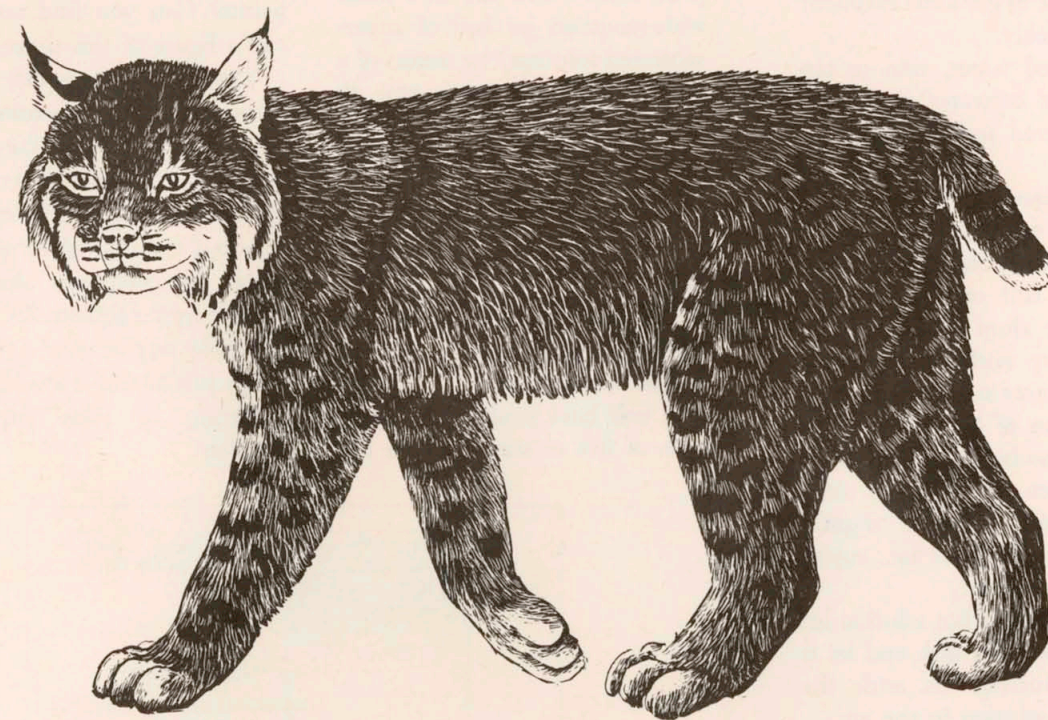
## THE BOBCAT

Canada lynx and cougars are specialized types of predators that require a certain type of habitat and depend on specific prey animals, snowshoe rabbits and deer, for survival. The bobcat, on the other hand, is capable of adapting to many different habitats and circumstances. They can be found in mountains, deserts, prairies, forests, farmlands, and even in the outskirts of large towns and cities. In many areas where the lynx has been eliminated, the bobcat has quietly moved in to take its place. It is steadily expanding its range northward over most of the country, although it is usually found south of the dense, coniferous forests preferred by the lynx.

Elusive and shy by nature, bobcats hunt mainly at night thus escaping most human eyes. They can live undetected in heavily populated areas and even benefit the farmer by killing crop-destroying rodents. Large bobcats are capable of killing deer, but as a rule, prey mainly on rabbits, hares, rodents and some birds. With the possible exception of the wolverines, no other animal can match, pound for pound, the ferocity of a cornered bobcat. Dogs, two or even three times its size, stand little chance in a fight with this scrappy little cat. The fury it displays in battle has earned it the name "wild cat" and a reputation as a savage and fearless fighter.

Bobcats are generally slightly smaller than the lynx, but some individuals grow quite large. The two could be confused by the casual observer, but there are some distinct differences. The bobcat has shorter legs and smaller feet, the ear tufts are shorter or non-existent, and it has a black spot on top of its tail instead of a completely black tip. Colours range from light grey to dark reddish brown, and it usually has distinct dark spotting over all its body. The average bobcat weighs about 25 pounds, but they may vary from 10 to 60 pounds.

Though they are not considered plentiful, bobcats are steadily increasing in numbers and expanding their range. The future looks much brighter for the adaptable bobcat than it does for its wild cousins, the lynx and cougar.



Elusive and shy by nature, bobcats hunt mainly at night.



# LOOKING FOR A NEW HOBBY?

## Try making and collecting your own crystals (Part 2)

By HELEN D. STEWART

Last month I described some of the crystals that nature has created, and told you that this month you would have the chance to create your own crystals.

You will first of all have to gather the following things together.

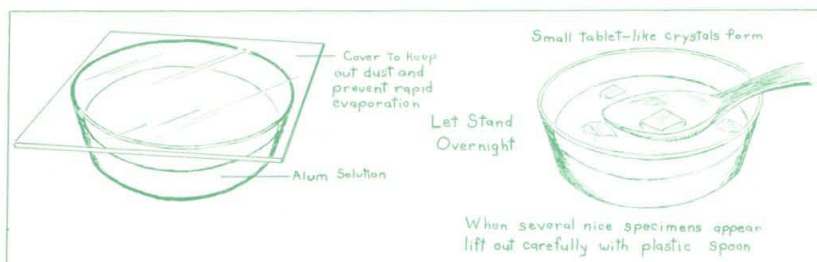
Some discarded glass jam jars, two shallow plastic or glass flat bottomed dishes, a glass measuring cup, a plastic funnel, filterpaper, a plastic spoon or small plastic spatula, and crystalline substances such as salt, sugar, alum, borax, Rochelle salt. (The latter three may be obtained from any drug store very inexpensively).

Don't forget that all of your equipment must be spotlessly clean.

Now, here's what you do.

Alum is a good substance to start with as it presents few problems and you will be able to get some excellent results very quickly.

1. Use distilled water, rain or tap water. The tapwater should be boiled, filtered and cooled before you start.
2. Stir powdered alum (potassium aluminum sulphate), a spoonful at a time into water in a pint jar two-thirds full of water. Keep adding the alum until no more will dissolve with stirring. The solution is now saturated. Set the jar in a pan of boiling water in order to dissolve the undissolved alum. When the liquid is clear the solution will be slightly supersaturated. Label jar "supersaturated solution".
3. Pour some of the hot solution into a shallow glass dish and let it cool undisturbed. Set aside the rest of the solution in the jar.
4. Blot up any liquid on the crystal.
5. Pour the solution in the dish into a glass measuring cup with a lip.



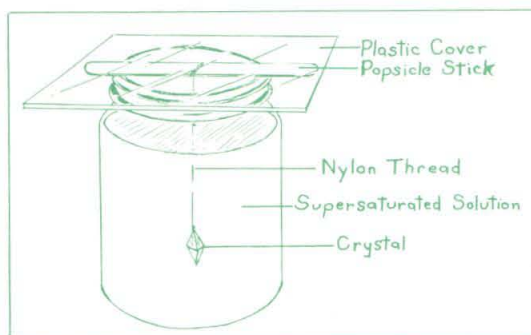
6. Rinse and dry the dish and then refill it to a depth of one inch with more of the supersaturated solution. Drop five or six of the crystals (seeds) into the dish. Be careful to keep them well apart.
7. Turn once a day with plastic spoon. Any new seeds that form should be removed and stored in a stoppered jar for future use.
8. After the crystals have grown to about  $\frac{1}{2}$  inch in diameter suspend them (each one in a small wide-mouthed jar full of supersaturated solution) by means of a loop of nylon thread in two directions and secure with a slip knot. Tie the thread to a sucker or popsicle stick which will lie across the top of the jar. The crystal must hang  $\frac{2}{3}$  of the way below the surface of the liquid. When the crystal reaches 2 inches in diameter (2-3 days) it should be removed.
9. You will have similar crystals in each of five or six jars. Pick the

most perfect one for your collection. Dry thoroughly.

10. Holding it by the nylon thread, spray with a colourless non-toxic plastic spray. Now it is ready for your collection box. A plastic box with several compartments and a tight fitting lid is perfect.

Examine it carefully. How many faces does this crystal have? What shape are the faces? How many edges does it have? How many points? Can you find out what we call a figure of this shape?

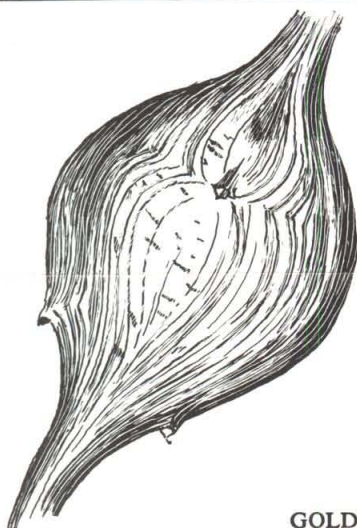
Try making crystals with the other substances mentioned. Compare the shapes. Are they all different? As you become expert at making crystals you will want to make various coloured crystals. Some good ones to grow are potassium alum, chrome alum, cupric sulphate. Of course you can make any of your crystals colourful by just adding a few drops of food colouring to your supersaturated solution!



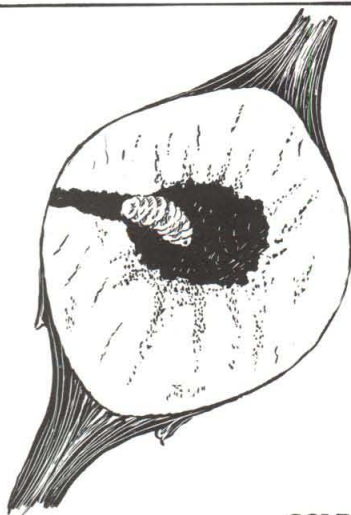
# THIS MONTH: focus on GALLS



FEMALE LAYING EGGS  
(GOLDENROD)



GOLDENROD GALL  
(EXTERIOR)



GOLDENROD GALL  
INTERIOR

One of the least known yet one of the most fascinating sides of nature is the intriguing world of plant galls. Although most people don't realize it, it is just about impossible to walk anywhere without seeing some. The trick, of course, is to know what to look for.

Galls are odd-looking swellings that occur anywhere on a plant — buds, leaves, flowers, twigs, under the bark, and even the roots.

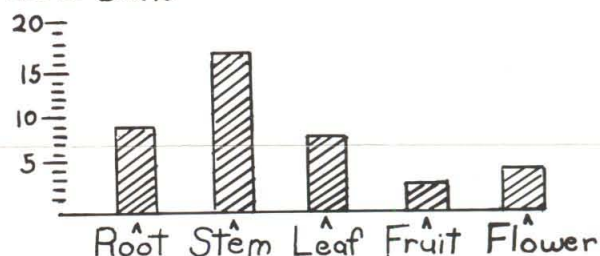
The insect gall maker lays her eggs in a tender growing tip of a plant, and at the same time leaves an irritating liquid which makes the gall start to form. The egg then hatches into a little larva which continues to make the gall develop by giving off more of the same liquid. As time passes on the portion of the plant around the larva swells and grows larger.

## ACTIVITY PROJECTS

### ACTIVITY PROJECT #1

Make a bar graph to show the most common part of the plant on which the gall grows. Your graph might look something like this.

#### No. of Galls



### ACTIVITY PROJECT #2 GOLDENROD AND OAK GALLS

- Collect a number of these galls and discover . . . (1) The average length of a gall . . . (2) The average circumference of a gall.
- Dissect each gall and measure the length and width of the hole left by the larva.
- Look for an oak tree and then try to see how many different types of galls you can discover.

### EMPTY OAK APPLE GALL (WASP)





# Woodlore

by John Macfie

## AUTUMN CAMPING

If you belong to an average camping vacation family, camping out means squeezing into a crowded, noisy public camp ground in July or August, where you are likely to feel little closer to nature than in the city suburbs. If this is so, for a totally different experience, I suggest you try to sell your parents on the idea of an autumn weekend camping trip to one of our provincial parks.

At the close of the Labour Day weekend provincial parks suddenly empty of people, and the wilderness aspect returns miraculously to the landscape. Yet most of these parks remain open into October for the benefit of the few who have discovered the special delights of camping in the fall. After Thanksgiving most parks cease to charge fees, but continue to admit the rare camper who shows up at the gates.

The fall camper, and I have seen many of them since my work occasionally takes me to provincial parks, strikes me as differing in certain ways from the summer camper. He tends to use a canoe rather than a power boat. The traffic jam of high-powered boats towing skiers is gone, and he has the lake to himself to explore in leisurely fashion. He takes longer walks into undisturbed areas within or beyond the confines of the park. Weather is cool and the bush free of biting insects. Leaves are either in autumn colours or have already fallen to form a deep, crisp carpet that is pleasant to walk in, opening up vistas that were closed to the summer camper. More often than not he carries binoculars to observe migrating birds and other wildlife. And he may have a mushroom basket on his arm, a sure sign of a fellow who has

confidence in his knowledge of nature.

You will have your choice of campsites (if you venture beyond 100 miles north of Toronto you may even have an entire park to yourself) so select one that is sheltered from the wind. A summer weight sleeping bag will need to be fortified with a blanket or two, and rubber or leather boots are recommended for those long walks. Forget swimming unless you like really cold water.

Nights are longer in September and October, but campfires are cheerier. Part of the fun of walking is discovering dry hardwood limbs for the evening fire. And the night sounds you hear will be those of nature, a loon on the misted lake, an owl, or perhaps even howling wolves, not a blaring transistor radio in the adjoining campsites.

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